ABSTRACT

When in an optical signal amplifying triode 10, light of a second wavelength λ_2, selected from among light from a first optical amplifier 26, into which a first input light L_1 of a first wavelength λ_1 and a second input light L_2 of second wavelength λ_2 have been input, and a third input light (control light) L_3 of a third wavelength λ_3 are input into a second optical amplifier 34, an output light L_4 of the third wavelength λ_3, selected from among the light output from the second optical amplifier 34, is light that is modulated in response to the intensity variation of one or both of the first input light L_1 of the first wavelength λ_1 and the third input light L_3 of the third wavelength λ_3 and is an amplified signal, with which the signal gain with respect to the third input light (control light) L_3 of the third wavelength λ_3 is of a magnitude of 2 or more. An optical signal amplifying triode 10, which can directly perform an optical signal amplification process using control input light, can thus be provided.